

IN THE CLAIMS:

Listing of Claims:

1. (original) A method for detecting leakage from a disk drive enclosure, comprising:
providing a disk drive enclosure having a lubricating material and a tag material therein,
wherein at least a portion of the lubricating material and the tag material are in the vapor phase;
and
measuring a concentration of the tag material in the vapor phase.
2. (original) A method as in claim 1, wherein the tag material comprises a halogenated material.
3. (original) A method as in claim 2, wherein the halogenated material comprises a halogenated sulfur material.
4. (original) A method as in claim 1, wherein the tag material comprises at least one material selected from the group consisting of SF₆ and S₂F₁₀.
5. (original) A method as in claim 1, wherein the tag material comprises SF₆ and S₂F₁₀.
6. (original) A method as in claim 4, wherein the lubricating material comprises a perfluoropolyether.
7. (original) A method as in claim 1, further comprising determining a leak rate of the lubricating material from the vapor phase concentration of the tag material.
8. (original) A method as in claim 1, further comprising determining an amount of lubricating material remaining in the disk drive enclosure using the concentration of the tag material.

9. (original) A method as in claim 1, wherein the measuring a vapor phase concentration of the tag material is conducted inside of the disk drive enclosure.

10. (original) A method as in claim 9, wherein the measuring is carried out over a period of time at a predetermined interval.

11. (original) A method as in claim 1, further comprising:
measuring a concentration of the tag material outside of the enclosure over a time interval and determining a leak rate of the lubricating material from the disk drive enclosure.

12. (original) A method as in claim 11, further comprising determining a quantity of the lubricating material remaining in the disk drive enclosure.

13. (original) A method as in claim 1, further comprising measuring a concentration of the tag material outside of the disk drive enclosure over a period of time and determining a leak rate of the lubricating material from the disk drive enclosure.

14. (original) A method as in claim 13, further comprising determining a quantity of the lubricating material remaining in the disk drive enclosure after the period of time.

15. (original) A method as in claim 1, wherein the tag material has a volatility that is greater than that of the lubricating material.

16. (original) A disk drive system comprising:
at least one disk adapted to store data;
at least one transducer adapted to read and write data to and from the disk; and
a lubricant composition comprising a lubricant component adapted to lubricate the disk surface and a tag component, wherein the tag component has a volatility that enables the tag to be detected in the vapor phase.

17. (original) A disk drive system as in claim 16, wherein the tag component comprises a halogenated sulfur material.

18. (original) A disk drive system as in claim 16, wherein the tag component comprises at least one material selected from the group consisting of SF_6 and S_2F_{10} .

19. (original) A disk drive system as in claim 16, wherein the tag component comprises SF_6 and S_2F_{10} .

20. (original) A disk drive system as in claim 18, wherein the lubricating component comprises a perfluoropolyether.

21. (original) A disk drive system as in claim 16, wherein the tag component volatility is greater than that of the lubricant.

22. (original) A disk drive system comprising:
at least one disk adapted to store data;
at least one transducer adapted to read and write data to and from the disk;
a first source of a volatile lubricant; and
a second source of a tag component incorporated into a substantially non-volatile material, wherein the tag component has a volatility that enables the tag component to be detected in the vapor phase.

23. (original) A disk drive system as in claim 22, wherein the volatile lubricant includes a perfluoropolyether material and the tag component comprises a halogenated sulfur material that is incorporated into a hydrocarbon oil.

24. (canceled)

25. (previously presented) A lubricant composition for disk drive systems comprising a lubricant material and a tag material, wherein the tag material is adapted to be detected in the vapor phase.

26. (original) A lubricant composition as in claim 25, wherein the tag material comprises a halogenated sulfur molecule.

27. (original) A lubricant composition as in claim 25, wherein the tag material comprises at least one material selected from the group consisting of SF_6 and S_2F_{10} .

28. (original) A lubricant composition as in claim 27, wherein the lubricant material comprises a perfluoropolyether.

29. (previously presented) A lubricant composition as in claim 27, wherein the lubricant material comprises a material selected from the group consisting of alcohols, hydrocarbon esters, stearic acid, palmitic acid, and other carboxylic acids

30. (previously presented) A lubricant composition as in claim 27, wherein the lubricant material comprises a material selected from the group consisting of a perfluoropolyether or volatile hydrocarbon compounds of the variety used in formulating greases.

31. (original) A computer system comprising:
a disk drive including a disk drive enclosure;
a disk drive lubricant composition including a lubricant component and a tag component;
and
a sensor adapted to detect a quantity of the tag component in the vapor phase.

32. (original) A computer system as in claim 31, wherein the sensor is positioned outside the disk drive enclosure.

33. (original) A computer system as in claim 31, wherein the sensor is positioned inside the disk drive enclosure.

34. (original) A computer as in claim 31, where the computer includes a computer program that is capable of causing the computer system to measure the concentration of the tag component in the vapor phase at a predetermined time interval.

35. (original) A computer as in claim 31, wherein the computer includes a computer program that is capable of causing the computer system to measure the concentration of the tag component and determine at least one of a leak rate of the lubricant material from the disk drive assembly and an amount of the lubricant material in the disk drive assembly.

36. (original) A computer as in claim 31, wherein the tag component has a volatility that is greater than that of the lubricant.

37. (original) A computer as in claim 31, further comprising a lubricant component source and a target component source, wherein the lubricant component source is separate from the tag component source.

38. (original) A computer as in claim 31, further comprising a source that contains both the lubricant component and the tag component.

39. (previously presented) A lubricant composition as in claim 25, wherein the tag material comprises SF_6 and S_2F_{10} .